



## National Ocean Service at a Glance

We value your interest, questions, and comments.  
Please feel free to contact us.

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National Ocean Service  
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[www.nos.noaa.gov](http://www.nos.noaa.gov)

Public Affairs/Media Relations (301) 713-3066

### **NOAA Coastal Services Center**

(843) 740-1200  
Brings new technology, training, and information to coastal resource managers.

### **National Centers for Coastal Ocean Science**

(301) 713-3060  
Provides scientific expertise for improved coastal stewardship through research, monitoring, and assessments of natural and human impacts on coastal ecosystems.

### **Center for Operational Oceanographic Products and Services**

(301) 713-2981  
Collects, analyzes, and distributes historical and real-time observations and predictions for water levels, coastal currents, and other data.

### **Office of the Coast Survey**

(301) 713-2770  
Creates marine navigational charts and related products and conducts hydrographic surveys.

### **National Geodetic Survey**

(301) 713-3222  
Gathers latitude, longitude, and elevation measurements needed to provide the reference framework necessary for surveying, mapping, and navigation.

### **Office of Ocean and Coastal Resource Management**

(301) 713-3155  
Provides national ocean and coastal policy leadership and administers the Coastal Zone Management Act. Manages the National Marine Sanctuary program and assists the states in managing the National Estuarine Research Reserves.

### **Office of Response and Restoration**

(301) 713-3038  
Responds to spills of oil and hazardous materials. Works to find remedies to damage caused by hazardous waste sites and conducts assessments and restoration activities to recover coastal and marine resources.

### **Aeronautical Charting and Cartography**

(301) 713-2619  
Creates, reproduces, and distributes aeronautical navigation products and digital databases for the U.S., its territories, and possessions.

### **Staff Office for International Programs**

(301) 713-3078  
Builds and sustains capacities for global coastal and marine stewardship.

### **Special Projects Office**

(301) 713-3000  
Provides technical assistance to NOS programs and facilitates NOS partnerships.

### **Management and Budget Office**

(301) 713-3056  
Provides leadership in procurement, budget, strategic planning, policy development, human resources, information technology, safety and security, and other administrative and management areas.

U.S. Secretary of Commerce  
William M. Daley

Under Secretary of Commerce for Oceans and Atmosphere, and  
Administrator, National Oceanic and Atmospheric Administration—NOAA  
D. James Baker, Ph.D.

Assistant Administrator for Ocean Services and Coastal Zone Management,  
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Nancy Foster, Ph.D.

February 2000



# NATIONAL OCEAN SERVICE 1999

## Working for America's Coasts



# Habitat

Coastal areas are constantly changing because of both natural and human forces. Expanding coastal populations and development can threaten the health and survival of plants, animals, and habitats necessary for sustained economic and environmental vitality. The challenge for the National Ocean Service and its partners is to increase public understanding and awareness of coastal habitats and the threats to them in order to protect, enhance, and restore these critical areas. Coral reef destruction, harmful algal blooms, coastal "dead" zones, chemical contaminants, human population pressures, climate change, and other threats to marine life will continue to dominate NOS' attention in the years to come.

**Coastal Zone Management Program Expanded.** Minnesota became the 33rd state to join the NOS Coastal Zone Management Program, a federal-state partnership to manage the impacts of population growth and development on the nation's coastlines. There are 35 coastal and Great Lakes states and territories in the United States.

**National Research Reserves System Doubled.** Research reserves were dedicated at Kachemak Bay, AK, Grand Bay, MS, and Guana-Tolomato-Matanzas, FL,

bringing the total number of estuarine research reserves to 25 out of 27 proposed sites. The addition of the Alaska site doubled the number of acres of estuaries and other important coastal habitats under management for research, education, and resource protection in this federal-state partnership.

**American Samoa Coral Reefs Restored.** NOS, the Coast Guard, the Department of the Interior, and local officials began the removal of nine fishing boats wrecked on the coral reefs at Pago Pago, American Samoa. To prevent further reef damage, this unique partnership implemented the fastest-ever restoration plan under the Oil Pollution Act of 1990. This project also included the first payment of a natural resource damages claim to NOAA from the Oil Spill Liability Trust Fund. Future work includes repairing damaged reef structure and transplanting live corals to replace those killed by physical and oil-spill injuries.

**Coral Reefs Protected and Restored.** Damaged coral reefs in the Florida Keys National Marine Sanctuary were restored using limestone boulders cemented into place and transplanted hard and soft coral. Beacons were also installed to redirect ship traffic to protect the reefs from ship groundings.

**Seagrass Mapping Enhanced.** NOS scientists developed a remote-controlled Deep Sea Sled with a video camera and other sensors to aid in the mapping of seagrass beds, which are important habitat for many marine species.

**Sustainable Seas Expeditions Launched.** The first round of Sustainable Seas Expeditions to 8 of the 12 National Marine Sanctuaries was completed in partnership with the National Geographic Society and the Goldman Foundation. This five-year initiative to explore, document, and provide critical scientific data on America's coastal waters will develop a strategy for restoring and conserving the nation's marine resources.

**NOS Leads HAB, Hypoxia Research.** Much of our coast experiences hypoxia (low oxygen) or harmful algal blooms (HABs) annually. NOS chairs the Inter-agency Task Force, established by the Harmful Algal Bloom and Hypoxia Research and Control Act. This Task Force develops assessments on the causes and ecological and economic impacts of HABs and hypoxia nationwide, with an emphasis on the Gulf of Mexico. In 1999, the largest observed hypoxic, or "dead zone," in the Gulf of Mexico was mapped

by NOS-funded scientists. It covered an area the size of New Jersey (about 7,700 square miles).

**New Analysis Used to Study Red Tides.** NOS scientists developed a comprehensive red tide capability using a combination of satellite imagery and sampling to detect and identify the toxic red algal blooms. Physical and biological oceanographers from NOS forecasted the red tide's landfall, and applied forensic science to find the origin of toxins in dead marine mammals and fish. In 1999, red tide killed many dolphins, turtles, sea birds, and fish off Florida's west coast, and is linked to human respiratory irritation.

**Spill Response Provided.** NOS provided spill trajectory modeling and other technical expertise on 125 oil and chemical spills. One such incident involved the deliberate in-situ burning of oil onboard the *New Carissa*, a bulk ship that ran aground off the coast of Oregon. The oil

burning contained the spill and prevented additional harm to sensitive habitats in the area.

**Toxic Waste Cleanup Cases Settled.** NOS provided technical expertise on environmental impact evaluations, remedial investigations, risk assessment, and cleanup strategies for over 20 priority hazardous waste sites. NOS, its NOAA partners, and other parties settled seven natural resource damage cases. This resulted in an estimated \$19 million for habitat restoration, not including the value of acres of wetlands acquired for restoration and mitigation projects.

**Monitor Preservation Underway.** NOS is involved in a multi-year effort to save portions of the Civil War-era USS *Monitor*, the first U.S. ironclad warship to see battle. NOS' 1999 *Monitor* research expedition focused on surveying and assessing the ship's lower hull and engine room to facilitate plans for shoring the hull and recovering the engine in the year 2000. In 1975, the resting place of the USS *Monitor* was designated as the first of the 12 National Marine Sanctuaries.

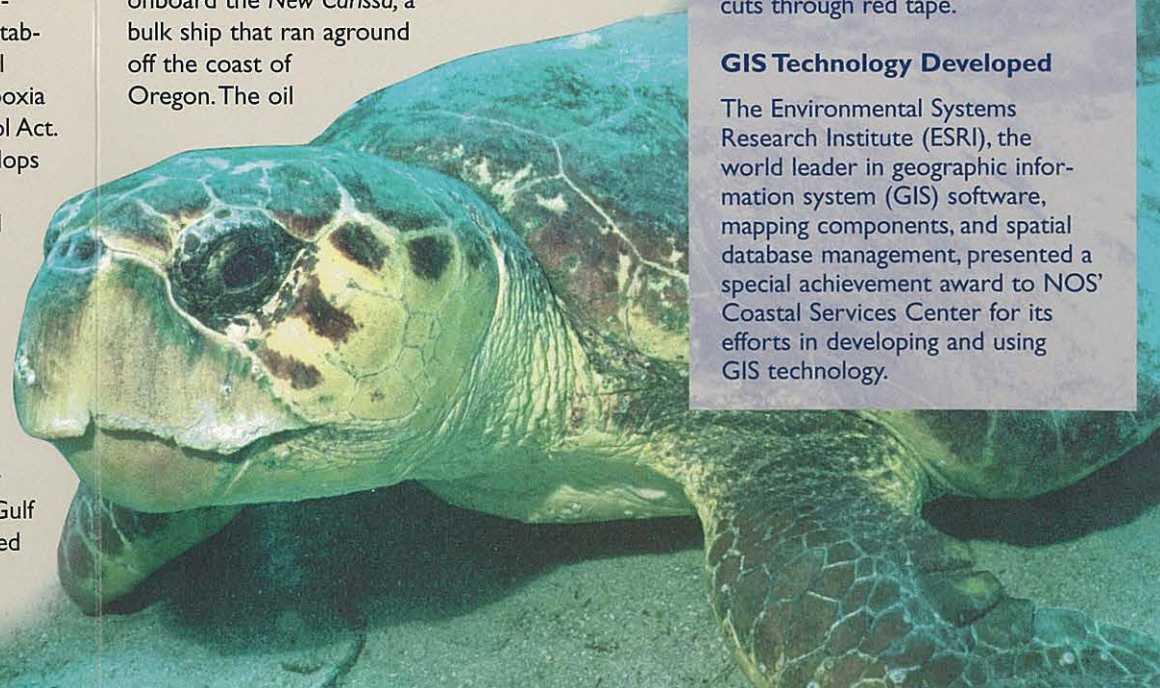
## Hammer and ESRI Awards

### User-Friendly Grants System Developed

A team led by NOS' Office of Ocean and Coastal Resource Management received a National Performance Review Hammer Award for creating and implementing a web-based coastal zone program grant application process that saves money and cuts through red tape.

### GIS Technology Developed

The Environmental Systems Research Institute (ESRI), the world leader in geographic information system (GIS) software, mapping components, and spatial database management, presented a special achievement award to NOS' Coastal Services Center for its efforts in developing and using GIS technology.





# Navigation

In the last five decades, the average size of ships has doubled and seagoing commerce has tripled. Half of the cargo transported through U.S. waters consists of hazardous materials. The National Ocean Service provides the nation with the information, tools, and services necessary for safe, efficient marine navigation. This includes up-to-date paper and electronic nautical and aeronautical charts, shoreline surveys, and information on water levels, currents, and weather. NOS also manages the National Spatial Reference System, a set of geographic coordi-

nates that support land surveying, navigation, mapping, and users of the Global Positioning System (GPS).

**Hydrographic Center of Excellence Established.** NOS has partnered with the University of New Hampshire and industry leaders to establish the first academic center in the United States for research and training in hydrography. Hydrographic surveys provide data on waterway characteristics and obstructions used in nautical charts.

## **Blueprint for Nation's Marine Transportation System Unveiled.**

NOS participated in a national task force that drafted a strategic plan for ensuring that the nation's system of ports, waterways, and channels remain globally competitive, safe, secure, and protective of the environment. The plan serves as guidance for NOS, other federal agencies, and private-sector development of the nation's marine transportation system.

## **Accurate Height of the Washington Monument Recorded.**

NOS demonstrated the benefits of GPS technology and sophisticated surveying equipment to capture a more precise measurement of the Washington Monument's height. NOS researchers are comparing this measurement with 1880s surveys to analyze the accuracy available from space-based survey technology.

## **Alternatives to Conventional Shoreline Mapping Explored.**

Cloudy conditions often prevent accurate aerial photography for charting shorelines. Satellite radar imagery is not subject to such problems. Preliminary results from tests to map shoreline features in Alaska using radar show promise, and research at NOS is continuing.

## **NOS Navigation Products Updated.**

NOS continued to reduce its backlog of critical marine navigation routes in need of updated charting by completing 68 in-house hydrographic surveys and awarding over \$20 million in survey contracts. NOS added 146 new nautical chart editions to its suite of nautical charts and completed an initial set of electronic navigation charts (ENCs).

## National Performance Review Hammer Awards

### **Maritime DGPS Developed**

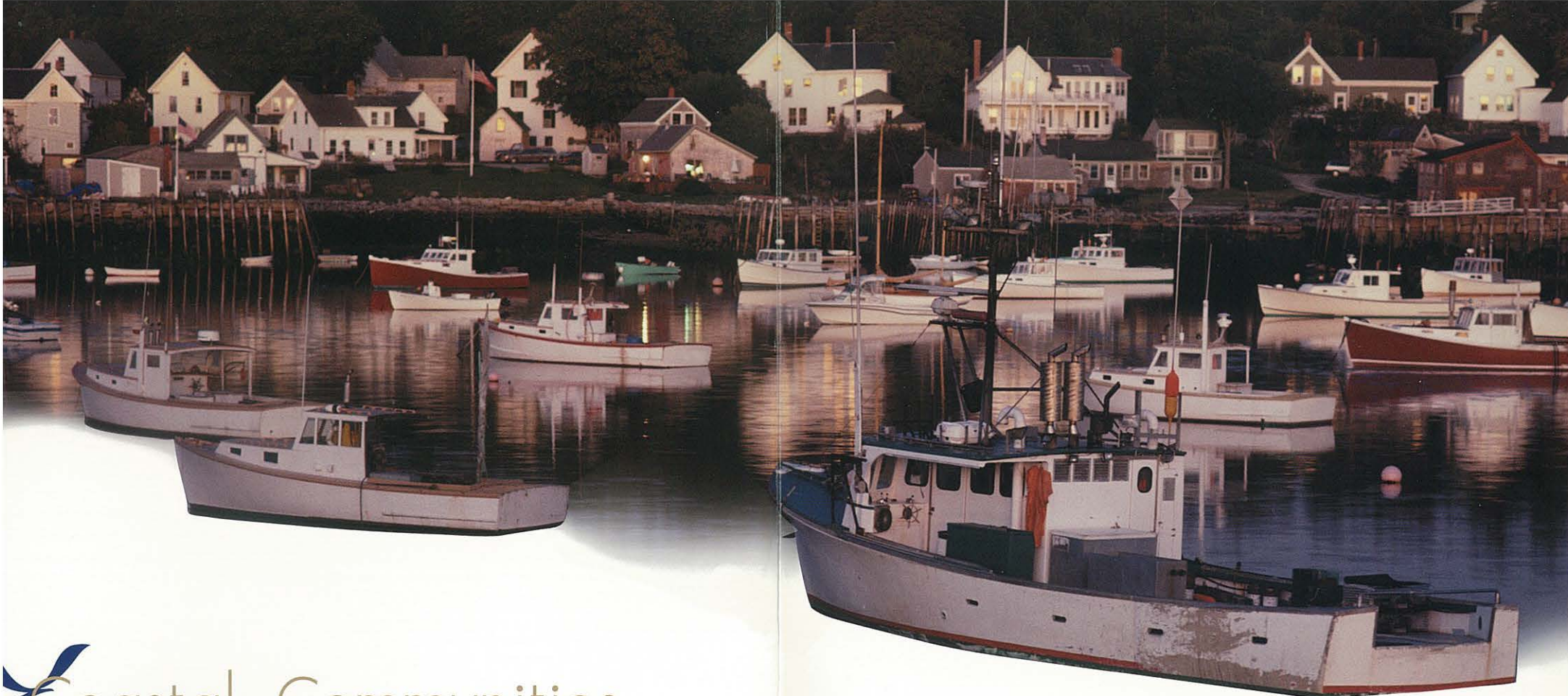
An NOS National Geodetic Survey project team was part of a larger federal group honored by the Office of the Vice President with a National Performance Review Hammer Award for its work on developing a maritime differential global positioning system (DGPS). This system provides mariners with accurate positioning coordinates to enable safer transit along crowded or narrow waterways and channels.

### **Nautical Chart Process Modernized**

A National Performance Review Hammer Award recognized NOS' Office of Coast Survey for its development of a computer-assisted mapping system. The new system reduced time, effort, and expense in the labor-intensive compilation and production of nautical charts and produced NOS' first digital nautical chart product.







## Coastal Communities

The coastal zone contains some of our nation's most economically valuable, ecologically diverse, and sensitive natural resources. Although this area represents only 17 percent of the U.S. land mass, almost half of the U.S. population lives along the coast, and most of our largest cities are located there. The pressures of increasing population, recreation, and development have fragmented spawning grounds, degraded water quality, and increased the vulnerability of communities to natural hazards. The challenge for the National Ocean Service and its state and local partners is to develop and apply informational and technical resources for revitalizing waterfronts and industrial

sites, reducing damage from natural disasters, and promoting new development that minimizes impacts on natural resources.

**Ocean Education Materials Unveiled.** NOS began an ambitious outreach and education effort to raise awareness of ocean exploration. Several National Marine Sanctuaries hosted interactive summits among students, teachers, and ocean experts to discuss the Sustainable Seas Expeditions. A teacher resource book was developed, and interactive web links enabled users to download scientists' mission logs and view live video from the expeditions.

**Coastal Zone Vision Promoted.** In July, NOS co-sponsored Coastal Zone 99 (CZ99) in San Diego, CA. Under the theme of "The People, the Coast, the Ocean: Vision 2020," conference sessions focused on human impacts, volunteerism, watershed management, and ocean science to promote the exchange of lessons learned and innovative approaches for ocean and coastal management. NOS opened "Coastal Zone 2025," a national town meeting over the Internet, to focus interest on the future of the coast.

**National Dialogues on Coastal Stewardship Initiated.** Through a series of National Dialogues, NOS and the coastal stewardship

community explored critical issues affecting the management and use of U.S. coastal resources and identified significant environmental trends affecting the coast.

**America's Ocean Future Report Published.** NOAA joined other federal agencies in publishing *Turning to the Sea: America's Ocean Future*. The report outlines the nation's first comprehensive ocean policy, recommending action on issues ranging from water quality and management of coastal habitats to safe navigation and ocean research and exploration. NOS leads in implementing about half of the 52 priority actions from this report.

**Brown Tide Symposium Held.** NOS sponsored an Informational Symposium on current research into the massive blooms of microscopic algae that have been plaguing Long Island's coastal waters since 1985, nearly destroying the once-thriving Peconic Bay scallop industry. The NOS-funded research may offer clues into the cause of the brown tide and solutions for managing the affected natural resources.

**Communities Revitalized.** NOS assisted Glen Cove, NY, in cleaning up and revitalizing its waterfront. NOS provided assessment and remediation of damaged coastal resources, and worked with New York State's coastal program to develop master plans and public

access improvements. Also, NOS and NOAA's Office of Sustainable Development sponsored workshops for federal, state, and local participants that ensured Glen Cove's continued success in revitalization. These "Commitment to Action" workshops focused on jurisdiction, permitting, and community revitalization grants. NOS expanded this support to several Brownfields Showcase Communities, an interagency initiative to assist communities reusing contaminated sites. With the success of Glen Cove, NOS is pursuing similar initiatives in Providence, RI; Stamford, CT; Baltimore, MD; and E. Palo Alto, CA.





## Coastal Hazards

Storms batter coastal areas with high winds, huge waves, and storm surges that threaten human communities and natural habitats. The National Ocean Service works to find innovative ways to provide information, tools, and techniques that will reduce the vulnerability of communities to storms, tsunamis, harmful algal blooms, fish kills, marine mammal strandings, and other coastal hazards. For example, NOS, NOAA's National Weather Service, and other federal and state partners are studying the Earth's climate to improve storm prediction and warning systems. NOS also establishes coastal preparedness plans, educates the public about coastal hazards, and develops tools such as geographic information systems (GIS) to help communities plan for and respond to coastal hazards.

**Prototype Risk & Vulnerability Tools Developed.** NOS produced an analytical software tool kit for New Hanover County, NC,

that demonstrates how communities can reduce their vulnerability to storms and other hazards. The kit teaches communities how to analyze the physical, social, economic, and environmental risks associated with severe storms.

**Storm Damage Assessments Conducted.** Using aerial photography, satellite technology, and digital mapping techniques, NOS analyzed land-cover changes in North Carolina caused by Hurricanes Bonnie, Fran, Dennis, and Floyd. This will help managers prepare better emergency response and redevelopment plans.

**Disaster Response Team Activated.** During and after Hurricane Georges (Fall 1998), the NOS Disaster Response Team provided on-site technical assistance to authorities in Puerto Rico, the Virgin Islands, and the Gulf Coast. NOS flew coastal mapping missions over Mississippi, Alabama, and Louisiana; responded to a request by the port of Key West to survey channels

closed by storm damage to allow the reopening of the port; and delivered real-time water levels throughout the storm for use by NOAA's National Weather Service and emergency officials.

**Disaster Response Planning Enhanced.** NOS created a more comprehensive plan for responding to a wide range of potential disasters. This included responding to requests to expand agency-wide mission capabilities for oceanographic modeling and surveys to assist search-and-rescue teams in locating the wreckage of John F. Kennedy, Jr.'s plane and the Egypt Air Flight 990 crash.

**Storm Surge Web Site Launched.** A new NOS web site that provides near real-time observations on tidal surges caused by coastal storms and hurricanes is helping community leaders make better decisions on flood response and evacuation procedures.

## Organization & Culture

The National Ocean Service promotes the evolution of a more inclusive, internal corporate culture that is science-based, service-oriented, and responsive and adaptive to change. To make progress in any of its programmatic areas of responsibility, NOS must have a strong, effective workforce and organization, and also new ways to reach its customers and constituents. NOS established new processes to strengthen the connections between strategic and operational planning efforts and how we spend money. NOS is also breaking down institutional barriers to progress by promoting educational opportunities for its current and future workforce.

**Diversity Network Restructured.** NOS restructured its Diversity Network working group to include all levels of management. The network has begun implementing five initiatives, including enhancement of the quality of life in the workplace and professional development of the NOS workforce.

**New Web Sites Introduced.** NOS redesigned or launched a number of web sites to enhance public education and awareness of its programs and ocean/coastal issues. These web sites provide valuable research, data, and educational resources for the public.

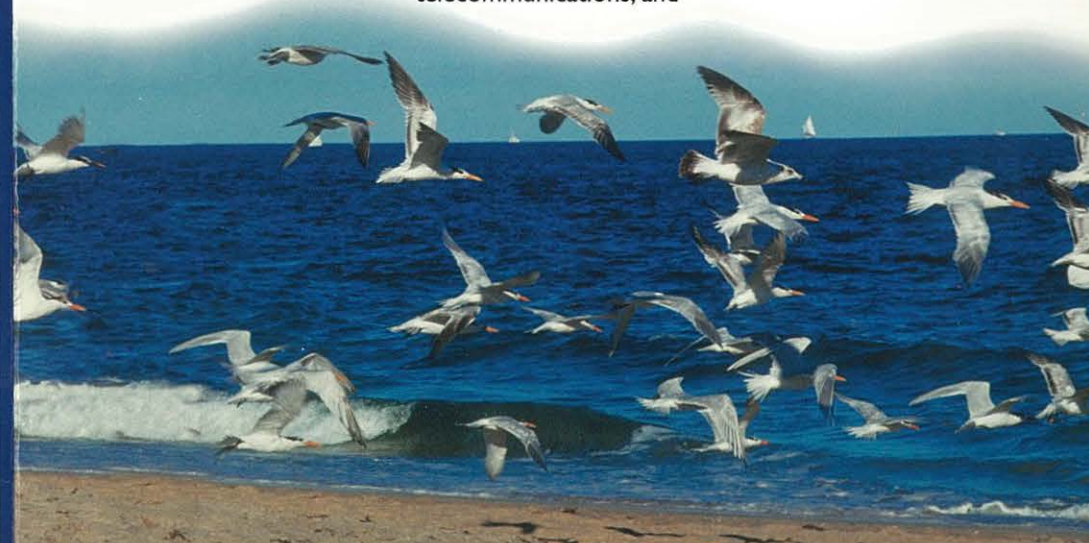
**Children Educated About Ocean Issues.** During NOS' second annual Bring Your Child to Work Day, 115 children learned about ocean issues and environmental stewardship through interactive activities on mapping the ocean and skies and resolving community conflicts. Four web sites allowed the children to view the day's activities with their classmates when they returned to school.

**Geodesy High School Program Created.** NOS is helping high school students in Maryland learn about the Global Positioning System (GPS) by teaching them how to accurately map their school grounds. GPS has been incorporated into a new, hands-on curriculum that uses computers, telecommunications, and

other emerging technologies to gather, analyze, and communicate information about the physical world.

**Faculty and Student Internships Awarded.** This year, 10 students and one faculty member participated in NOS' Faculty and Student Internship Program; almost half were from historically black colleges and universities. Another eight students participated in a summer internship placement, and 40 employees received on-the-job training through NOAA's Student Educational and Employment Program.

**Rotation Program Launched.** A new rotational assignment program helps NOS employees obtain professional experience outside of their current job position. Employees gained a different perspective and greater understanding of NOS by rotating to offices whose programs differ from their home offices. Rotations last 3-6 months and are accompanied by professional development workshops and an individual skills assessment.







## Message from the Assistant Administrator

I am pleased to provide this annual update on the work of the National Ocean Service (NOS). As one of the five principal line offices within the National Oceanic and Atmospheric Administration (NOAA), NOS has extensive responsibilities for promoting stewardship of the nation's ocean and coastal resources, ranging from producing nautical charts in support of safe navigation to managing the National Marine Sanctuaries.

NOS' programs strive to balance today's uses of coastal and ocean resources with the protection and preservation of the coastal and ocean environment for future generations. In order to fulfill our responsibilities, we work with partners throughout NOAA, other federal agencies, state, tribal, and local governments, international and nongovernmental organizations, academia, and the private sector.

In February 1999, the President and the Congress approved a significant reorganization within NOS that provides a new, more focused approach to bridging the gaps between science, management, and public policy to support enhanced coastal stewardship. Among the changes at NOS was the addition of several science labs, including the Beaufort, North Carolina, laboratory. This lab is one of the nation's leading research facilities for ecology, fishery management, resource development, and aquaculture. It recently celebrated its 100th birthday.

This update marks our progress in implementing those changes and fulfilling our diverse responsibilities. It does not chronicle all of our work and accomplishments for this past year. Rather, it highlights efforts that have made a significant impact on people and their environment, and provides a snapshot of some of the issues, challenges, and opportunities that NOS is facing.

Please take a few moments to learn about the accomplishments of the dedicated people at NOS who contribute a wide range of skills and talents to ensure that our nation's coastal areas remain safe, healthy, and productive.

*Nancy Foster*

*Assistant Administrator for Ocean Services and Coastal Zone Management*



## National Ocean Service's Primary Goals

The National Ocean Service has five primary goals:

### **Navigation**

Promote safe navigation by improving navigation products and services in response to changing technologies and customer needs.

### **Coastal Communities**

Increase coastal communities' ability to adapt to changing conditions, resulting in a balance of environmental and economic benefits.

### **Habitat**

Enhance the preservation and restoration of the U.S. coastal and ocean environments.

### **Coastal Hazards**

Reduce the costs and risks to people, the economy, and natural resources associated with natural and human-induced hazards, including climate change.

### **Organization & Culture**

Promote a more inclusive, internal corporate culture that is results-driven, service-oriented, science-based, and responsive and adaptive to change.

These five NOS goals complement NOAA's two major missions: environmental stewardship and environmental assessment and prediction.